

**MINISTRY OF HEALTH**

**PORT REITZ DISTRICT HOSPITAL  
Mombasa, Kenya**

**Quantification Workbook for GOK NASCOP ARVs**

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Prepared with assistance from



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# Instructions

This quantification workbook is a tool to assist the pharmacy staff at Port Reitz District Hospital (PRDH) to quantify needs of ARVs for the GOK ART Program.

- The workbook is designed to take the pharmacy staff through the process step by step
- Each step has a table to be completed which either requires data to be collected or a calculation to be done.
- Some of the tables require data to be collected over a number of months (usually the last six months). It is anticipated that during the scale up phase that PRDH will place an order for ARVs every month – therefore a quantification workbook will be completed every month. Use the data collected for the previous workbook to complete the data collection tables for each new workbook to minimise work.
- Some of the calculations e.g. for estimating the quantities needed for new patients, will not need to be done every month. Once the program has stabilised you can use the same estimates from month to month making adjustments for fluctuations in recruitment if needed. It is suggested that you review this data every 3 to 6 months after the program has stabilised.
- When instructed to round up or down to the nearest whole number, for numbers where the first decimal place is 0.5 or higher round up (e.g. for 6.7 round up to 7) and where the first decimal place is less than 0.5 round down (e.g. for 3.3 round down to 3).
- When instructed to round up or down to 2 decimal places, for numbers where the third decimal place is 0.005 or higher round up (e.g. for 1.008 round up to 1.01) and where the third decimal place is less than 0.005 round down (e.g. for 0.033 round down to 0.03)
- Glossary/acronyms:

SP – Starter pack

Issued for NVP containing regimens for the first 15 days of ART therapy where once daily dose of NVP must be given

CP – Continuation pack

Issued for NVP containing regimens for the continuation phase where twice daily dose of NVP must be given. Issued to patient once the 15 day starter pack is completed

Patient pack

2 or more drug products in separate bottles/cartons packaged into a single outer container for issue to a single patient. The drug products may/or may not be fixed dose combinations (FDC). Each patient pack contains either a 15 day (starter pack) or 30 day (continuation pack) supply

## I. Quantifying Needs for Adult First Line ARVs

Complete Section I to quantify needs for adults currently taking first line ART regimens (Part A) and needs for new adult patients (Part B). The needs for new and current patients are summed in Part C. Do not include ARVs for adult PEP. The first line ART regimens used in the GOK NASCOP ART program are:

First line **standard**:

Stavudine (d4T)/ Lamivudine (3TC)/ Nevirapine (NVP)

First line **non-standard**:

Stavudine (d4T)/ Lamivudine (3TC)/ Efavirenz (EFV)

d4T dose for patients weighing less than 60 kg = 30mg bd

d4T dose for patients weighing more than 60kg = 40mg bd

### ***PART A – Needs for Adults Currently Taking First Line ARV Products***

#### **1. Decide on the number of months supply to order**

To calculate the number of months to order add the number of months until the next procurement is placed (the procurement period) to the number of months supply held as buffer stock. Buffer or safety stock is stock held to protect against stock-outs and depends on lead time, the reliability of supplier and fluctuations in scale up. The number of months of buffer stock held should never be less than the lead time where lead time is the time taken from generating an order by the Pharmacy to the time that the drugs ordered are delivered to the Pharmacy. Use copies of *Diflucan & ARVs Programme: Monthly Report and Request* and *Issue and Receipt Voucher (S12)* forms to estimate average lead times for each product.

Use current patterns of usage, fluctuations in scale up and supplier reliability to adjust the buffer stock to the lowest level that is compatible with keeping inventory stock down while protecting against stockouts. It is recommended that the minimum buffer stock held be 1 month.

| <b>Table 1A</b>  |  |
|--|--|
| Number of months until next order is placed (procurement period) |  |
| Number of months of buffer (safety) stock                        |  |
| <b>Total # months to be ordered (a)</b>                          |  |

## 2. Enter data on the number of patients currently taking each first line ARV drug regimen into Table 2A.

For patients who are still taking starter packs, count them under the product they will eventually take (c). Obtain this data either from the *Diflucan & ART Daily Activity Register* or *ART Patient Dispensing Record – Summary Page – Adults* or from the *Hospital Pharmacy Bin Card (MOH 999)* or from the ART database.

Total # patients taking (or soon to begin) each drug product (d) is equivalent to **total monthly consumption in packs** as 1 pack of each of these drugs is issued per patient per month.

| <b>Table 2A</b>   |   |  |  |
|---|---|--|--|
| <b>Drug product</b><br>(pack size)  | <b># patients currently taking this product (b)</b> | <b># patients who will begin taking this product when they finish the starter pack (c)</b> | <b>Total # patients taking (or soon to begin) each drug product (d)</b><br>= Add (b) and (c) |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) (CP) |   |  |  |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) (CP) |   |  |  |
| <b>1st line Non-Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)  |   | 0  |  |
| <b>1st line Non-Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)  |   | 0  |  |

## 3. Calculate total quantity in patient packs needed for existing patients.

Multiply the current monthly consumption by the number of months (a) to be ordered

| <b>Table 3A</b>  |   |   |  |
|--|---|---|--|
| <b>Drug product</b><br>(pack size)   | <b>Total monthly consumption (packs) (d)</b><br>from Table 2A | <b>Total # months supply to be ordered (a)</b><br>From Table 1A | <b>Total # packs needed for existing patients (e)</b><br>= Multiply (d) by (a) |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(30 day patient pack)     |   |   |  |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(30 day patient pack)     |   |   |  |
| <b>1st line Non-Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/EFV 600mg<br>(30 day patient pack) |   |   |  |
| <b>1st line Non-Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/EFV 600mg<br>(30 day patient pack) |   |   |  |



## ***PART B – Needs of Adult First Line ARV Products for Scaling Up***

Calculate requirements for **new** patients coming into the program over time period (a) [see Table 1A for (a)]. In order to forecast ARV needs for new patients, you will need to investigate the rate of in-take of new patients over the last six months and the regimens that they were prescribed. Work through the steps in Part B to help you prepare these forecasts.

**NOTE: Once the program has stabilised you do not need to collect all the data in Table 4A or do all the calculations in Part B at every procurement period.** It is however advisable to recheck the profile of adults entering the program every 3 to 6 months. More information is given in each step.

### **4. Use Table 4A to collect the data that you will need to perform your calculations for this section**

In Table 4A enter information on the number of all adults starting first line ART over the last six months or total program time if less (i) and the number of men (ii) and women (iii) starting each first line regimen each month. Obtain this data either from the *Diflucan & ART Daily Activity Register* or *ART Patient Dispensing Record – Summary Page – Adults* or from the ART database.

**NOTE: For stable programs:** where the ratios of men to women starting ART and for starting each regimen are stable from month to month, you do not need to collect the data for (ii) and (iii) at every procurement period.

| Table 4A |                    |  |  |   |  |
|----------|--------------------|--|--|---|--|
| (i)      | Enter Month & year | Total # of men starting on first line ART for each month | Total # of women starting on first line ART for each month | Total # of all adults starting on first line ART for each month |  |
|          | Month 1            |  |  |   |  |
|          | Month 2            |  |  |   |  |
|          | Month 3            |  |  |   |  |
|          | Month 4            |  |  |   |  |
|          | Month 5            |  |  |   |  |
|          | Month 6            |  |  |   |  |
|          |                    |  |  |   |  |
| (ii)     | Enter Month & year | Total # of men starting each ART regimen per month       |  |   |  |
|          |                    | 1st line Std <60kg<br>d4T 30mg/ 3TC/ NVP                 | 1st line Std >60kg<br>d4T 40mg/ 3TC/ NVP                   | 1st line Non-Std <60kg<br>d4T 30mg/ 3TC/ EFV                    | 1st line Non-Std >60kg<br>d4T 40mg/ 3TC/ EFV |
|          | Month 1            |  |  |   |  |
|          | Month 2            |  |  |   |  |
|          | Month 3            |  |  |   |  |
|          | Month 4            |  |  |   |  |
|          | Month 5            |  |  |   |  |
|          | Month 6            |  |  |   |  |

| Table 4A continued |                    |  |  |  |  |
|--------------------|--------------------|--|--|--|--|
| (iii)              | Enter Month & year | Total # of women starting each ART regimen per month |  |  |  |
|                    |                    | 1st line Std <60kg<br>d4T 30mg/ 3TC/ NVP             | 1st line Std >60kg<br>d4T 40mg/ 3TC/ NVP | 1st line Non-Std <60kg<br>d4T 30mg/ 3TC/ EFV | 1st line Non-Std >60kg<br>d4T 40mg/ 3TC/ EFV |
| Month 1            |                    |  |  |  |  |
| Month 2            |                    |  |  |  |  |
| Month 3            |                    |  |  |  |  |
| Month 4            |                    |  |  |  |  |
| Month 5            |                    |  |  |  |  |
| Month 6            |                    |  |  |  |  |

### 5. Calculate the average number of adults starting first line ART per month in the last six months stratified by gender

Enter information on the number of adults starting first line ART over the last six months or total program time if less from Table 4A (i).

Total each column (f) and divide by 6 (or total program time) to get the average number of men, women and all adults starting first line ART per month. **Round up/ down your calculations for (g), (h) and (j) to 2 decimal places.**

Calculate the average % of men (k) and the average % of women (l) starting first line ART each month for all 3 sites and round up/down to the nearest whole number. **(Crosscheck your calculations by checking that the average % of men (k) plus the average % of women (l) equals 100%)**

Finally, compare the average number of all patients (j) starting first line ART per month with the data for months 4, 5 and 6 (or the last 3 months if less than 6 months data is collected). Decide that this point whether you need to decrease or increase (j) and enter either the average or if appropriate the increased or decreased value in the "Adjusted (j)" row.

**NOTE for stable programs:** where the ratios of men to women starting ART and for starting each first line regimen are stable from month to month **AND the number of months supply being ordered is unchanged**, use the data from the last quantification workbook and adjust the quantities for the new rate of scale up in Table 13A. Take the values from Table 13A for (F) – the total of packs needed for new patients and adjust for the new rate of scale up. E.g. if in the previous procurement period you calculated that you would need 46 packs of *1st line Std <60kg patient continuation packs* for a total of 21 new patients starting on first line ART every month and now the number of new patients has increased to 38 per month but the profile is unchanged, then the amount of *1st line Std <60kg patient continuation packs* needed for new patients

= 46 multiplied by 38 and divide by 21 = 83.24

= 84 packs of *1st line Std <60kg patient continuation packs* are needed.

Write this new value in Table 12A and continue on from there. **If the rate of scale up is also unchanged, no adjustment will be needed**

**IMPORTANT:**

- It is advisable to recheck the profile of adults entering the program every 3 to 6 months.
- If an increase or decrease in the procurement period or buffer stock changes (a) – the total number of months to be ordered – from the last work book, you must recalculate the whole of Table 13A again using the new value for (D) – you cannot use the data from the old workbook.

| <b>Table 5A</b>   |                       |  |  |  |
|---|-----------------------|--|--|--|
|   | <b>Month and year</b> | <b>Total # of men starting on first line ART for each month</b>                              | <b>Total # of women starting on first line ART for each month</b>                              | <b>Total # of all adults starting on first line ART for each month</b>                             |
|   | Month 1               |  |  |  |
|   | Month 2               |  |  |  |
|   | Month 3               |  |  |  |
|   | Month 4               |  |  |  |
|   | Month 5               |  |  |  |
|   | Month 6               |  |  |  |
| <b>Total # each column (f)</b>  |                       |  |  |  |
| Average # adults starting per month over last 6 months<br>= Divide each column (f) by 6 or total program time if less<br><b>Round up/down to 2 decimal places</b> |                       | Av. number men starting first line ART per month <b>(g)</b> =                                | Av. number women starting first line ART per month <b>(h)</b> =                                | Av. number all adults starting first line ART per month <b>(j)</b> =                               |
| <b>Round up/ down to the nearest whole number</b>   |                       | Av. % men starting ART each month <b>(k)</b><br>= Divide (g) by (j) and multiply by 100<br>= | Av. % women starting ART each month <b>(l)</b><br>= Divide (h) by (j) and multiply by 100<br>= | <b>Crosscheck: Check that the average % of men (k) plus the average % of women (l) equals 100%</b> |
| Adjusted average number all adults starting first line ART per month  |                       |  |  | Adjusted <b>(j)</b><br>=   |

## 6. Calculate the percentages of men starting on each ARV first line regimen per month for the last six months

These percentages will be used to forecast the needs for new patients starting on ARVs assuming that the profile of male patients starting on ART remains the same. Using Table 4A (ii) **count only the new MALE patients in each month**. Enter data for the last six months or total program time If less. **Round the number in the last column (o) up/down to the nearest whole number.**

**NOTE for stable programs:** Calculating these percentages every month may not be necessary. Once the program has stabilised rechecking the profile of male patients entering the program every 3 to 6 months should be sufficient.

| Table 6A                                     |  |         |         |         |         |         |   |   |   |
|--|--|---------|---------|---------|---------|---------|---|---|---|
| Regimen                                      | # men STARTING on each regimen per month |         |         |         |         |         | Total # men starting on each regimen in months 1-6 (m)<br><br>Add up rows for months 1 to 6 | Av. # men starting on each regimen per month (n)<br><br>= Divide (m) by 6 or total program time if less | % men starting on each regimen per month (o)<br>= Divide (n) by (g) from Table 5A and multiply by 100 |
|  | Month 1                                  | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 |   |   |   |
| 1st line Std <60kg<br>d4T 30mg/ 3TC/ NVP     |  |         |         |         |         |         |   |   |   |
| 1st line Std >60kg<br>d4T 40mg/ 3TC/ NVP     |  |         |         |         |         |         |   |   |   |
| 1st line Non-Std <60kg<br>d4T 30mg/ 3TC/ EFV |  |         |         |         |         |         |   |   |   |
| 1st line Non-Std >60kg<br>d4T 40mg/ 3TC/ EFV |  |         |         |         |         |         |   |   |   |

Crosscheck: Check that the totals in the last column for (o) add up to 100%

## 7. Calculate the percentages of women starting on each ARV first line regimen per month for the last six months

These percentages will be used to forecast the needs for new patients starting on ARVs assuming that the profile of female patients starting on ART remains the same. Using Table 4A (iii) **count only the new FEMALE patients in each month**. Enter data for the last six months or total program time if less. **Round the number in the last column (r) up/down to the nearest whole number.**

**NOTE for stable programs:** Calculating these percentages every month may not be necessary. Once the program has stabilised rechecking the profile of female patients entering the program every 3 to 6 months should be sufficient.

| Table 7A   |  |         |         |         |         |         |   |   |   |
|--|--|---------|---------|---------|---------|---------|---|---|---|
| Regimen  | # women STARTING on each regimen per month |         |         |         |         |         | Total # women starting on each regimen in months 1-6 (p)<br><br>Add up rows for months 1 to 6 | Av. # women starting on each regimen per month (q)<br><br>= Divide (p) by 6 or total program time if less | % women starting on each regimen per month (r)<br><br>= Divide (q) by (h) from Table 5A and multiply by 100 |
|  | Month 1                                    | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 |   |   |   |
| <b>1st line Std &lt;60kg</b><br>d4T 30mg/ 3TC/ NVP     |  |         |         |         |         |         |   |   |   |
| <b>1st line Std &gt;60kg</b><br>d4T 40mg/ 3TC/ NVP     |  |         |         |         |         |         |   |   |   |
|  |  |         |         |         |         |         |   |   |   |
| <b>1st line Non-Std &lt;60kg</b><br>d4T 30mg/ 3TC/ EFV |  |         |         |         |         |         |   |   |   |
| <b>1st line Non-Std &gt;60kg</b><br>d4T 40mg/ 3TC/ EFV |  |         |         |         |         |         |   |   |   |

Crosscheck: Check that the totals in the last column for (r) add up to 100%

8. Use tables 5A, 6A and 7A to complete the following summary table

| Table 8A   |   | From Table 5A   |
|--|---|---|
| Av. Number of new patients starting first line ART per month - <b>adjusted (j)</b> |   |   |
| Av. % men starting ART each month <b>(k)</b>                                       |   |   |
| Av. % women starting ART each month <b>(l)</b>                                     |   |   |
| Regimen  | % men starting on each first line regimen per month <b>(o)</b><br>from Table 6A | % women starting on each first line regimen per month <b>(r)</b><br>from Table 7A |
| <b>1st line Std &lt;60kg</b><br>d4T 30mg/ 3TC/ NVP                                 |   |   |
| <b>1st line Std &gt;60kg</b><br>d4T 40mg/ 3TC/ NVP                                 |   |   |
|  |   |   |
| <b>1st line Non-Std &lt;60kg</b><br>d4T 30mg/ 3TC/ EFV                             |   |   |
| <b>1st line Non-Std &gt;60kg</b><br>d4T 40mg/ 3TC/ EFV                             |   |   |

9. For the adjusted average number of new patients starting on first line ART per month calculate how many of them will start on each ARV regimen.

Round the number in the last column (u) up/down to 2 decimal places.

| Table 9A   |   |   |   |
|--|---|---|---|
| Regimen  | Estimated # men who will start on each regimen per month <b>(s)</b><br>From Table 8A<br>= Multiply <b>adjusted (j)</b> by <b>(k)</b> and divide by 100<br>(write the answer here)<br>=<br>Multiply the answer by <b>(o)</b> and divide by 100 | Estimated # women who will start on each regimen per month <b>(t)</b><br>From Table 8A<br>= Multiply <b>adjusted (j)</b> by <b>(l)</b> and divide by 100<br>(write the answer here)<br>=<br>Multiply the answer by <b>(r)</b> and divide by 100 | Estimated # patients who will start on each regimen per month <b>(u)</b><br><br>= Add (s) and (t) |
| <b>1st line Std &lt;60kg</b><br>d4T 30mg/ 3TC/ NVP     |   |   |   |
| <b>1st line Std &gt;60kg</b><br>d4T 40mg/ 3TC/ NVP     |   |   |   |
|  |   |   |   |
| <b>1st line Non-Std &lt;60kg</b><br>d4T 30mg/ 3TC/ EFV |   |   |   |
| <b>1st line Non-Std &gt;60kg</b><br>d4T 40mg/ 3TC/ EFV |   |   |   |

Cross check: check that the totals for (u) in the final column add up to "adjusted (j)"

10. Add 10% to adjust estimated monthly number of new adult ART patients for fluctuations.

Round the final column (w) up/down to 2 decimal places.

| Table 10A  |   |  |  |
|--|---|--|--|
| Regimen  | Estimated # patients who will start on each regimen per month (u) From Table 9A | 10% adjustment for fluctuations (v)<br>= Multiply (u) by 0.1 | Adjusted estimate of # new adult first line ART patients who will start on each regimen per month (w)<br>= Add (u) and (v) |
| <b>1st line Std &lt;60kg</b><br>d4T 30mg/ 3TC/ NVP     |   |  | (x)  |
| <b>1st line Std &gt;60kg</b><br>d4T 40mg/ 3TC/ NVP     |   |  | (y)  |
|  |   |  |  |
| <b>1st line Non-Std &lt;60kg</b><br>d4T 30mg/ 3TC/ EFV |   |  | (z)  |
| <b>1st line Non-Std &gt;60kg</b><br>d4T 40mg/ 3TC/ EFV |   |  | (A)  |

11. Calculate the number of starter packs that will be needed for new patients starting on NVP based regimens for time period a (from Table 1A). Round the final column (C) up/down to 2 decimal places.

| Table 11A   |  |  |   |  |
|---|--|--|---|--|
| Starter Packs<br>Drug Product   | # packs needed<br>per patient per<br>starter period<br>(B) | Adjusted estimate of # new<br>adult first line ART patients who<br>will start on d4T/ 3TC/ NVP<br>regimens per month<br>from Table 10A | # months supply<br>to be ordered (a)<br>from Table 1A | # starter packs needed for<br>new patients (C) |
| <b>1st line Standard &lt;60kg</b><br>d4T <b>30mg</b> /3TC 150mg/NVP 200mg<br>(15 day patient pack) (SP) | 1  | (x) from Table 10A<br>=  |   | Multiply (B) by (x) and by (a)<br>=            |
| <b>1st line Standard &gt;60kg</b><br>d4T <b>40mg</b> /3TC 150mg/NVP 200mg<br>(15 day patient pack) (SP) | 1  | (y) from Table 10A<br>=  |   | Multiply (B) by (y) and by (a)<br>=            |

12. Calculate the quantities of ARVs needed once the starter pack is completed for the estimated new patients for the total number of months to be ordered (a) from table 1A.

The number of new patients is accumulating for each month so you will need to adjust for this.

E.g. the program is scaling up at 5 new patients per month, every person uses 1 pack of *1st line Standard >60kg* per month and you want calculate the total number of packs needed for new patients for 3 months. You will need:

- 5 packs for 3 months for the patients who come in month 1 PLUS
- 5 packs for 2 months for the patients who come in month 2 PLUS
- 5 packs for 1 month for the patients who come in month 3
- giving a total of  $(5*3)+(5*2)+(5*1) = (5*6) = 30$  packs

Table 12A can be used to calculate the number of patient months supply needed (D) for a program that is increasing steadily every month.



| <b>Table 12A</b>   |          |          |          |           |           |           |           |           |           |           |           |           |
|--|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Time period (a)<br>in months   | 1        | 2        | 3        | 4         | 5         | 6         | 7         | 8         | 9         | 10        | 11        | 12        |
| # patient<br>months supply<br>needed for (a)<br>time period <b>(D)</b> | <b>1</b> | <b>3</b> | <b>6</b> | <b>10</b> | <b>15</b> | <b>21</b> | <b>28</b> | <b>36</b> | <b>45</b> | <b>55</b> | <b>66</b> | <b>78</b> |

**Complete table 13A to calculate the number of packs needed for new patients entering the program for the number of patient months supply needed.**

**Round the number in the last column (F) up/down to the nearest whole number.**

| <b>Table 13A</b>   |   |   |  |  |
|--|---|---|--|--|
| <b>Drug Product</b><br>(pack size)   | <b># packs<br/>needed per<br/>patient per<br/>month (E)</b> | <b>Adjusted estimate of # new adult<br/>first line ART patients who will<br/>start on each regimen per month<br/>from Table 10A</b> | <b># patient months<br/>supply needed (D)<br/>from Table 12A</b> | <b># packs needed for new<br/>patients (F)</b> |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> | 1   | (x) from Table 10A<br>=   |  | Multiply (E) by (x) and by (D)<br>=            |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> | 1   | (y) from Table 10A<br>=   |  | Multiply (E) by (y) and by (D)<br>=            |
| <b>1st line Non-Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         | 1   | (z) from Table 10A<br>=   |  | Multiply (E) by (z) and by (D)<br>=            |
| <b>1st line Non-Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         | 1   | (A) from Table 10A<br>=   |  | Multiply (E) by (A) and by (D)<br>=            |

## ***PART C – Needs of Adult First Line ARV Products for Current Patients and for Scaling Up***

### **13. Add the quantities for existing patients on first line therapy to the quantities needed for new patients**

| <b>Table 14A</b>   |  |  |  |   |
|--|--|--|--|---|
| <b>Drug product</b><br>(pack size)   | <b>Total # packs needed<br/>for existing patients (e)</b><br>From Table 3A | <b># starter packs<br/>needed for new<br/>patients (C)</b><br>From Table 11A | <b># packs needed for<br/>new patients (F)</b><br>From Table 13A | <b>Total # packs of first<br/>line treatment needed<br/>(G)</b> |
|  |  |  |  | Total each row  |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(15 day patient pack) <b>(SP)</b> |  |  |  |   |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(15 day patient pack) <b>(SP)</b> |  |  |  |   |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> |  |  |  |   |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> |  |  |  |   |
| <b>1st line Non-Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         |  |  |  |   |
| <b>1st line Non-Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         |  |  |  |   |

## II. Quantifying Needs for Adult Second and Third Line ARVs

Complete Section II to quantify needs for adults currently taking second and third line ART regimens. The calculations in this section do not currently include calculating needs for new patients.

Do not include ARVs for adult PEP. The ART regimens used in the GOK NASCOP ART program are:

**Second** line non-standard:

Zidovudine (ZDV)/ Lamivudine (3TC)/ Efavirenz (EFV)

**Third** line non-standard:

Zidovudine (ZDV)/ Lamivudine (3TC)/ Nevirapine (NVP)

### 1. Decide on the number of months supply to order

To calculate the number of months to order add the number of months until the next procurement is placed (the procurement period) to the number of months supply held as buffer stock.

Buffer or safety stock is stock held to protect against stock-outs and depends on lead time, the reliability of supplier and fluctuations in scale up. The number of months of buffer stock held should never be less than the lead time where lead time is the time taken from generating an order by the Pharmacy to the time that the drugs ordered are delivered to the Pharmacy. Use copies of *Diflucan & ARVs Programme: Monthly Report and Request* and *Issue and Receipt Voucher (S12) forms* to estimate average lead times for each product.

Use current patterns of usage, fluctuations in scale up and supplier reliability to adjust the buffer stock to the lowest level that is compatible with keeping inventory stock down while protecting against stockouts. It is recommended that the minimum buffer stock held be 1 month.

| <b>Table 1B</b>  |  |
|--|--|
| Number of months until next order is placed (procurement period) |  |
| Number of months of buffer (safety) stock                        |  |
| <b>Total # months to be ordered (a)</b>                          |  |

**2. Enter data on the number of adults CURRENTLY taking each second and first line ARV drug regimen into Table 2B.**

Obtain this data either from the *Diflucan & ART Daily Activity Register* or *ART Patient Dispensing Record – Summary Page – Adults* or from the *Hospital Pharmacy Bin Card (MOH 999)* or from the ART database. Total number of patients taking) each drug product **(b)** is equivalent to **total monthly consumption in packs** as 1 pack of each of these drugs is issued per patient per month.

| Table 2B   |  |
|--|--|
| Drug product<br>(pack size)  | Total #<br>patients<br>currently<br>taking this<br>product (b) |
| <b>2nd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/EFV 600mg<br>(30 day patient pack) |  |
| <b>3rd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) |  |

**3. Calculate total quantity in patient packs needed for existing patients by multiplying current monthly consumption by the number of months (a) to be ordered**

| Table 3B  |  |  |   |
|---|--|--|---|
| Drug product<br>(pack size)   | Total monthly<br>consumption<br>(packs) (b)<br>from Table 2B | Total # months<br>supply to be<br>ordered (a)<br>From Table 1B | Total # packs<br>needed for existing<br>patients (c)<br>= Multiply (b) by (a) |
| <b>2nd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/EFV<br>600mg<br>(30 day patient pack) |  |  |   |
| <b>3rd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/NVP<br>200mg<br>(30 day patient pack) |  |  |   |

### III. Quantifying Needs for Adult Post Exposure Prophylaxis (PEP)

Complete Section III to quantify needs for adults who will need PEP. The PEP regimens used in the GOK NASCOP ART program are:

Option 1:  
Zidovudine (ZDV)/ Lamivudine (3TC)

Option 2 <60kg:  
Stavudine (d4T) **30mg**/ Lamivudine (3TC)

Option 2 >60kg:  
Stavudine (d4T) **40mg**/ Lamivudine (3TC)

#### 1. Decide on the number of months supply to order

To calculate the number of months to order add the number of months until the next procurement is placed (the procurement period) to the number of months supply held as buffer stock.

Buffer or safety stock is stock held to protect against stock-outs and depends on lead time, the reliability of supplier and fluctuations in scale up. The number of months of buffer stock held should never be less than the lead time where lead time is the time taken from generating an order by the Pharmacy to the time that the drugs ordered are delivered to the Pharmacy. Use copies of *Diflucan & ARVs Programme: Monthly Report and Request* and *Issue and Receipt Voucher (S12) forms* to estimate average lead times for each product.

Use current patterns of usage, fluctuations in scale up and supplier reliability to adjust the buffer stock to the lowest level that is compatible with keeping inventory stock down while protecting against stockouts. It is recommended that the minimum buffer stock held be 1 month.

| <b>Table 1C</b>  |  |
|--|--|
| Number of months until next order is placed (procurement period) |  |
| Number of months of buffer (safety) stock                        |  |
| <b>Total # months to be ordered (a)</b>                          |  |

**2. In Table 2C, enter information on the number of adults receiving each PEP regimen over the last six months or total program time – whichever is the smaller.**

Obtain this data either from the *Diflucan & ART Daily Activity Register* or *ART Patient Dispensing Record – Summary Page – Adults* or from the *Hospital Pharmacy Bin Card (MOH 999)* or from the ART database.

Total the column (b) and divide by 6 or total program time to get the average number of adults receiving each PEP regimen per month. **Round up/down your calculations to the nearest whole number.**

At this point compare the average number of adults (c) receiving each PEP regimen per month with the highest value for any single month and decide whether to use average or the highest number of clients per month in the "Adjusted (c)" column in your calculations to estimate needs.

You may also want to increase the monthly average of PEP adult patients (c) for each PEP regimen for any increased demand that you may expect following planned initiatives to increase awareness or build demand for PEP. **Another alternative for fluctuating programs or where little data is available is to use the average number of clients per month and add one month of buffer stock.**

| Table 2C  |                      |   |  |  |
|---|----------------------|---|--|--|
|   | Enter month and year | Total # of adults starting on PEP regimen<br><b>Option 1: ZDV/3TC</b> | Total # of adults starting on a PEP regimen<br><b>Option 2 &lt;60kg: d4T 30mg/ 3TC</b> | Total # of adults starting on a PEP regimen<br><b>Option 2 &gt;60kg: d4T 40mg/ 3TC</b> |
| Month 1   |                      |   |  |  |
| Month 2   |                      |   |  |  |
| Month 3   |                      |   |  |  |
| Month 4   |                      |   |  |  |
| Month 5   |                      |   |  |  |
| Month 6   |                      |   |  |  |
| Total # adults (b)  |                      |   |  |  |
| Average # adults starting on each PEP product per month over last 6 months or total time if less<br>= Divide (b) by 6 or total program time in months if less |                      | (c)   | (c)  | (c)  |
| Adjusted average # of adults starting on each PEP product per month   |                      | Adjusted (c)  | Adjusted (c)   | Adjusted (c)   |

### 3. Finally, calculate estimated needs for adult PEP for time period (a).

The average number of adults starting on each PEP product per month (adjusted as necessary) (c) is equivalent to the **total monthly needs in packs** as 1 pack of each of these drugs is issued per adult per PEP course per month

| Table 3C   |  |   |   |
|--|--|---|---|
| Drug product   | Average # adults starting on each PEP product per month adjusted as needed "Adjusted (c)"<br>Adjusted (c) is equivalent to <b>total monthly needs in packs</b> as 1 pack of each of these products is issued per adult per PEP course per month<br>From Table 2C | Total # months to be ordered (a)<br>From Table 1C | Total # packs needed for adult PEP (d)<br>= Multiply (c) by (a) |
| <b>PEP Option 1:</b><br>ZDV 300mg/3TC 150mg<br>(30 day patient pack)         |  |   |   |
| <b>PEP Option 2 &lt;60kg:</b><br>d4T 30mg/3TC 150mg<br>(30 day patient pack) |  |   |   |
| <b>PEP Option 2 &gt;60kg:</b><br>d4T 40mg/3TC 150mg<br>(30 day patient pack) |  |   |   |

## IV. Summary of ARV Needs for Adults

Complete the final summary Table 1D

| <b>Table 1D</b>  |  |  |  |   |
|--|--|--|--|---|
| <b>Drug product</b>  | <b># packs needed for first line adult ART</b><br>From Table 14A | <b># packs needed for second and third line adult ART</b><br>From Table 3B | <b># packs needed for adult PEP</b><br>From Table 3C | <b>Total ARV needs (tablets and capsules) (a)</b><br>Total each row |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(15 day patient pack) <b>(SP)</b> |  |  |  |   |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(15 day patient pack) <b>(SP)</b> |  |  |  |   |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> |  |  |  |   |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> |  |  |  |   |
| <b>1st line Non-Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         |  |  |  |   |
| <b>1st line Non-Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         |  |  |  |   |
| <b>2nd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)                 |  |  |  |   |
| <b>3rd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/NVP 200mg<br>(30 day patient pack)                 |  |  |  |   |
| <b>PEP Option 1:</b><br>ZDV 300mg/3TC 150mg<br>(30 day patient pack)                                   |  |  |  |   |
| <b>PEP Option 2 &lt;60kg:</b><br>d4T 30mg/3TC 150mg<br>(30 day patient pack)                           |  |  |  |   |
| <b>PEP Option 2 &gt;60kg:</b><br>d4T 40mg/3TC 150mg<br>(30 day patient pack)                           |  |  |  |   |



## V. Summary of ARVs to be Ordered

Complete the final summary table 2D and calculate the quantity to order. Deduct usable balance in stock or on order (count only the ARVs that can be used at the current consumption rate before expiry) and prepare your order.

| <b>Table 2D</b>  |  |   |   |
|--|--|---|---|
| <b>Drug product</b>  | <b>Total # packs of first line treatment needed (a)</b><br>From Table 1D | <b>Quantity in stock or on order (b)</b><br>Count only usable stock | <b>Quantity to order (packs) (c)</b><br>= (a) minus (b) |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(15 day patient pack) <b>(SP)</b> |  |   |   |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(15 day patient pack) <b>(SP)</b> |  |   |   |
| <b>1st line Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> |  |   |   |
| <b>1st line Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/NVP 200mg<br>(30 day patient pack) <b>(CP)</b> |  |   |   |
| <b>1st line Non-Standard &lt;60kg</b><br>d4T 30mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         |  |   |   |
| <b>1st line Non-Standard &gt;60kg</b><br>d4T 40mg/3TC 150mg/EFV 600mg<br>(30 day patient pack)         |  |   |   |
| <b>2nd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/EFV<br>600mg<br>(30 day patient pack)              |  |   |   |
| <b>3rd line Non-Standard</b><br>ZDV 300mg/3TC 150mg/NVP<br>200mg<br>(30 day patient pack)              |  |   |   |
| <b>PEP Option 1:</b><br>ZDV 300mg/3TC 150mg<br>(30 day patient pack)                                   |  |   |   |
| <b>PEP Option 2 &lt;60kg:</b><br>d4T 30mg/3TC 150mg<br>(30 day patient pack)                           |  |   |   |
| <b>PEP Option 2 &gt;60kg:</b><br>d4T 40mg/3TC 150mg<br>(30 day patient pack)                           |  |   |   |